The MegaPAC Family

User Configurable AC-DC and DC-DC Switchers

PFC MegaPAC

85 to 265 Vac
100 to 380 Vdc

11.9"L x 6"W x 3.4"H

1600 Watts
w/230 Vac Input
or 150 Vdc Input
1200 Watts
w/115 Vac Input

1-16 Outputs

Autoranging MegaPAC

115/230 Vac, Autoranging
260 to 380 Vdc (optional)

11.5"L x 6"W x 3.4"H

1600 Watts
w/230 Vac Input
1200 Watts
w/115 Vac Input

1-16 Outputs

Mini MegaPAC

115/230 Vac, Strappable
260 to 380 Vdc

9.1"L x 6"W x 3.4"H

1000 Watts
w/115, 230 Vac Input

1-10 Outputs

Three-Phase MegaPAC

208/240 Vac - 3 Phase
230 Vac - Single Phase
260 to 380 Vdc

12"L x 7.5"W x 4.9"H
15"L x 7.5"W x 4.9"H Extended Chassis

2000 Watts
w/3Ø Input
1200 Watts
w/230 1Ø Input

1-20 Outputs

DC MegaPAC

12, 24, 36,
48, 72 Vdc

12"L x 6"W x 3.4"H

1600 Watts
w/48 or 72 Vdc Input

1-16 Outputs

Product Family Summary

MegaPAC family products give you up to 2000 watts of output power — when you want it, and only as much as you need. You choose your power level, you configure the supply. Simply select the appropriate ConverterPAC assemblies, slide them in and power up. Need more power later? Add additional ConverterPACs at your convenience.

ConverterPACs are available in a number of configurations (see below). For more information, give us a call.

Vicor Express
Andover, MA (800) 735-6200
Vicor Corporation
Chicago, IL (630) 769-8780
Vicor Westcor Division
Sunnyvale, CA (408) 522-5280

Family Features

	PFC MegaPAC	Autoranging, Mini MegaPAC	3Ø MegaPAC	DC MegaPAC
EN55022 Curve B and FCC B	STD	–	–	–
FCC/VDE Class "A"	–	STD	STD	–
High Reliability Ball Bearing Fan	STD	STD	STD	STD
General Shutdown	STD	STD	STD	STD
Individual Output ON/OFF (Sequencing)	STD	STD	STD	STD
Input Power Fail	STD	STD	STD	STD
Remote Sense	STD	STD	STD	STD
Output Overcurrent Protection	STD	STD	STD	STD
Parallel (Module to Module)	STD	STD	STD	STD
Parallel (Chassis to Chassis)	–	–	STD	STD
Power Factor Correction	STD	–	–	–
Phase Fail/Input Overcurrent Warning	–	–	STD	–
Over Temperature Warning	–	–	STD	STD
Analog Temperature Output	–	–	STD	STD

Modular ConverterPACs for MegaPAC Family Products

ModuPACs: Utilize one low noise, full size VI-200 DC to DC converter. Single output, up to 200W. Can be paralleled for more power.

VXI very low noise option available on request (≤50 mV p-p noise @ ≤15 Vdc; ≤150 mV @ 24 Vdc).

BatPACs: Programmable current source incorporating a BatMod module. Single output at 12V, 24V or 48V.

Trimpots for adjusting maximum voltage and current settings are standard.

DualPACs: Utilize two low noise, half-size VI-J00 DC to DC converters Dual outputs, up to 100W each.

VXI very low noise option available on request (≤50 mV p-p noise @ ≤15 Vdc; ≤150 mV @ 24 Vdc).

JuniorPACs: Utilize one low noise VI-J00 DC to DC converter. Single output, up to 100W.

VXI very low noise option available on request (≤50 mV p-p noise @ ≤15 Vdc; ≤150 mV @ 24 Vdc).

RAMPACs: Low noise ConverterPAC (<10 mV p-p) containing one VI-J00 and one VI-RAM. Single output, from 5-50V, up to 100W.

QPACs: Low noise ConverterPACs (<10 mV p-p or 0.15%, whichever is greater) using one VI-200 converter with differential and common mode filters. Single output up to 200W; can be paralleled for more power. Available in extended chassis 3Ø MegaPACs.

DualQPACs: Low noise ConverterPACs (<10 mV p-p or 0.15%, whichever is greater) using two VI-J00 converters and differential and common mode filters. Two outputs up to 100W each. Available in extended chassis 3Ø MegaPACs.

Junior QPACs: Low noise ConverterPACs (<10 mV p-p or 0.15%, whichever is greater) using one VI-J00 converter with differential and common mode filters. Single output up to 100W. Available in extended chassis 3Ø MegaPACs.

The Quickturns™ Program

Time to market is an increasingly critical factor to a successful new product introduction. As a result, more emphasis is being placed on rapid response to customer requirements than ever before.

In support of these immediate customer requirements, Vicor has instituted its "Quickturns" program. The program works something like this. A selection of single output ModuPAC assemblies are kept in stock, and when an order is received these ModuPACs are used to configure the MegaPAC of your choice: an Autoranging MegaPAC, PFC MegaPAC, Mini MegaPAC or Three Phase MegaPAC. Fully configured units are then shipped to the customer in one to two weeks. Please consult the factory if you have any special requirements.

ConverterPAC "Plug-In" Assemblies

Wide Choice of Modular Output Options

Each chassis in the MegaPAC family has numerous slots for Converter-PACs*, slide-in assemblies containing Vicor's very high density DC to DC converters. ConverterPACs enable the user to easily configure different voltage or power levels to meet almost any system power requirement. Not all the slots in MegaPAC family products have to be used; ConverterPAC slots may be filled with plastic airblocks as placeholders in anticipation of future power requirements. Modifying the supply is accomplished by loosening a single screw, sliding one ConverterPAC unit out and another in.

MegaPAC family products have a wide range of applications, including large scale ATE systems, telecommunications central office equipment and industrial control equipment, supercomputers and workstations. MegaPAC products are also used in battery charger, robotic, signal processing and quasi-military applications.

* All ConverterPACs are voltage sources, with the exception of the BatPAC, which is a current source.

ConverterPAC Output Voltage & Current Choices

ModuPAC, QPAC and BatPAC

Standard Output Voltages/Current Per Slot									A/R MegaPAC, PFC MegaPAC, Mini MegaPAC	DC MegaPAC (by input voltage)				
2V	3.3V	5V	12V	15V	24V	28V	48V		3ϕ MegaPAC	72V	48V	36V	24V	12V
40A	40A	40A	16.6A[1]	13.3A	8.3A[1]	7.1A	4.2A[1]	(200W)	✔	✔	✔			
30A	30A	30A	12.5A	10A	6.3A	5.4A	3.1A	(150W)	✔	✔	✔		✔	
20A	20A	20A	8.3A	6.6A	4.2A	3.6A	2.1A	(100W)	✔	✔	✔	✔	✔	
15A	15A	15A	6.3A	5A	3.1A	2.7A	1.6A	(75W)	✔	✔	✔	✔	✔	✔
10A	10A	10A	4.2A	3.3A	2.1A	1.8A	1A	(50W)	✔	✔	✔	✔	✔	✔

[1]*BatPAC output voltages and current combinations.*

Other output voltages available from 1V to 100V. Any number of ConverterPACs can be connected in parallel or in series up to 500V.

DualPAC, JuniorPAC, RAMPAC, DualQPAC and JuniorQPAC

Standard Output Voltages/Current Per Output									MegaPAC, PFC, Mini MegaPAC	DC MegaPAC (by input voltage)				
2V	3.3V	5V	12V	15V	24V	28V	48V		3ϕ MegaPAC	72V	48V	36V	24V	12V
20A	20A	20A	8.3A	6.6A	4.2A	3.6A	2.1A	(100W)	✔		✔†		✔†	
15A	15A	15A	6.3A	5A	3.1A	2.7A	1.6A	(75W)	✔		✔†		✔†	
10A	10A	10A	4.2A	3.3A	2.1A	1.8A	1A	(50W)	✔	✔	✔	✔	✔	✔
5A	5A	5A	2.1A	1.7A	1A	0.9A	0.5A	(25W)	✔	✔	✔	✔	✔	✔

Other output voltages available from 1V to 100V. These ConverterPACs cannot be paralleled. RAMPACs cannot be connected in series.

†*Narrower input range may be required. Consult factory.*

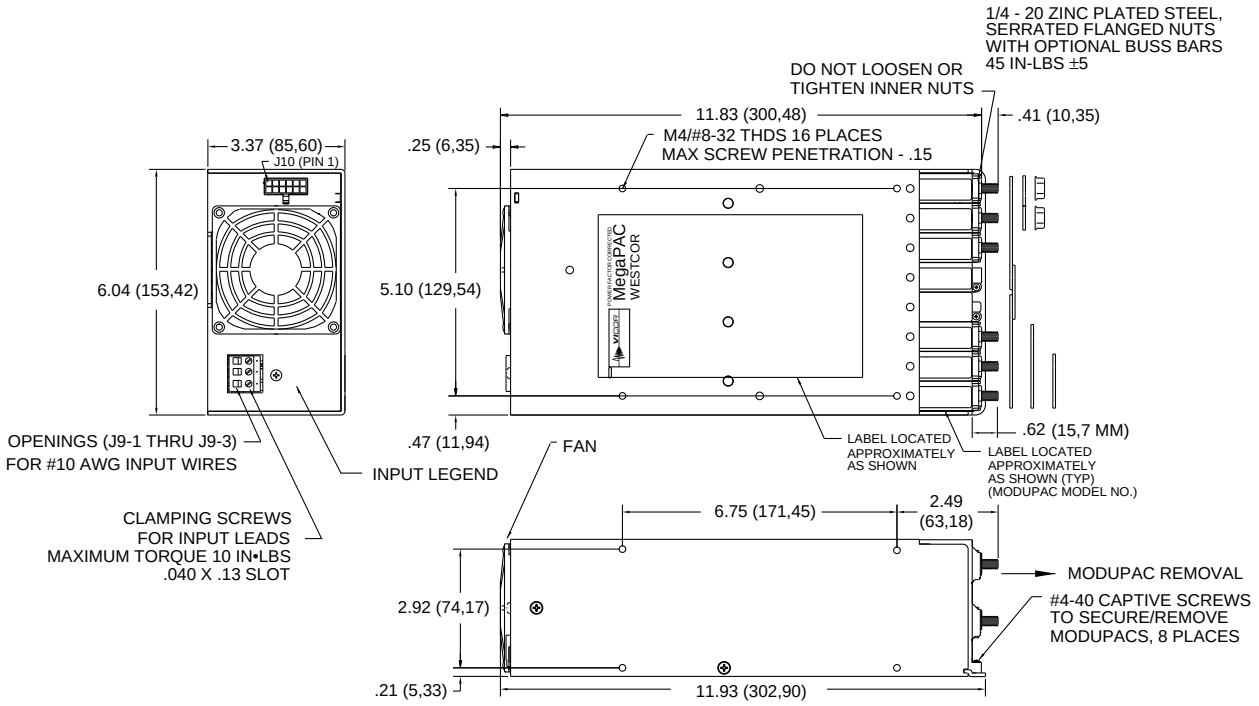
Specifications

(typical @ 25˚C, nominal line, 75% load unless otherwise specified)

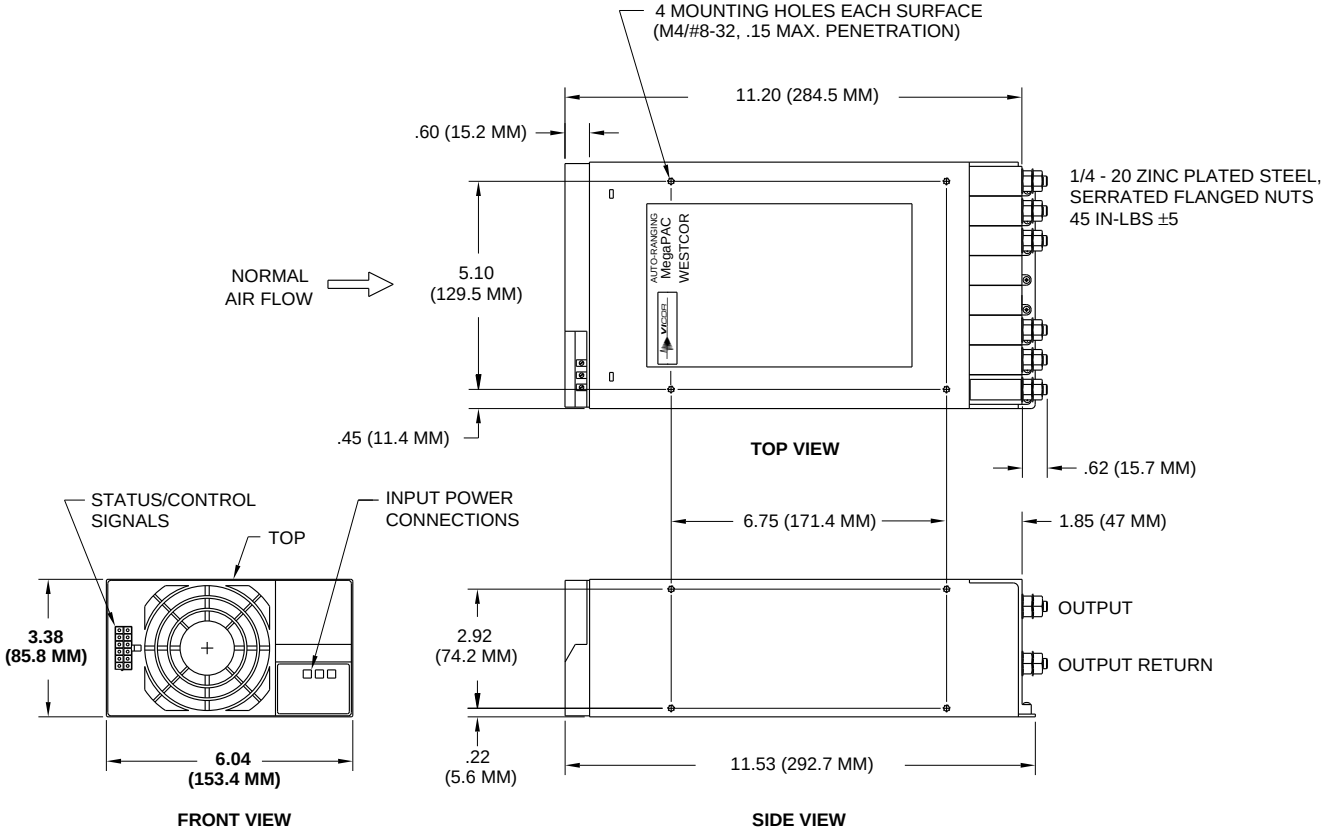
	PFC MegaPAC	A/R MegaPAC, Mini MegaPAC	3Ø MegaPAC	DC MegaPAC
INPUT				
Input	85-264 Vac 47-500 Hz 100-380 Vdc	115/230 Vac, 1ϕ, Autoranging (Strappable in Mini MegaPAC) 90-132 Vac, 180-264 Vac 47-500 Hz 260-380 Vdc (optional in A/R MegaPAC)	208/240 Vac, 3ϕ, 4 wire 180-264 Vac, 1ϕ 47-500 Hz 260-380 Vdc	12 Vdc (10-20) 24 Vdc (20-36) 36 Vdc (21-56) 48 Vdc (36-76) 72 Vdc (55-100) N/A
Line Regulation	0.2% max. from 10% to full load			
Inrush Current	17A rms @ 115 Vac 34A rms @ 230 Vac	30A rms @ 115 Vac 60A rms @ 230 Vac 60A rms @ 115 or 230 Vac for Mini MegaPAC	25A rms @ 230 Vac	5A peak @ 48 Vdc input
Ride Through Time	>20 ms at nom. line, full load			N/A
Power Fail	3 ms warning			N/A
Conducted EMI (47-63 Hz)	EN55022 Curve B FCC B	VDE & FCC Class A		BTNR 2511 Issue 4
Power Factor	.99 (115 Vac) .98 (230 Vac)	.65	.92 (3ϕ operation)	1.0
Transient Surge (Common Mode & Normal Mode)	IEC 60801-2 IEC 60801-5	EN/IEC 61000-4-2 Level 4 EN/IEC 61000-4-5 Level 3	EN/IEC 61000-4-2 Level 4 EN/IEC 61000-4-5 Level 3	EN/IEC 61000-4-2 Level 4 EN/IEC 61000-4-5 Level 2
OUTPUT				
Load Regulation	0.2% max. from 10% to full load 0.5% from no load to 10% load			
Setpoint Accuracy	1.0% for standard voltages 2.0% for special or adjustable voltages			
Ripple and Noise (20 MHz BWL)	Std. outputs; 2% or 100 mV p-p max., whichever is greater, 10% min. load. VXI option (15% min. load), 50 mV p-p max. for ≤15V outputs; 150 mV p-p for 24 Vdc outputs QPAC, DualQPAC, JuniorQPAC, RAMPAC: <10 mV p-p max.			
Overcurrent Protection	105-130% >5V outputs & DualPACS, JuniorPACs, RAMPACs, DualQPACs, JuniorQPACs 30-125% ≤5V outputs			
Overvoltage Protection	ModuPACs and QPACs: 115-135% N/A to DualPACs, JuniorPACs, BatPACs, RAMPACs, DualQPACs or JuniorQPACs			
Efficiency	80% typical	82% typical	82% typical	83% typical
Output Power	1600W @ 40˚C (230 Vac); 1200W @ 40˚C (115 Vac)	1600W @ 45˚C (230 Vac, A/R MegaPAC) 1200W @ 45˚C (115 Vac, A/R MegaPAC) 1000W @ 45˚C (115/230 Vac, Mini MegaPAC)	2000W @ 45˚C (3ϕ); 1200W @ 45˚C (1ϕ)	1600W @ 45˚C (Output power dependent upon input and output voltage)
Status Signals, Options	See page 97			
Storage Temperature	-20˚C to +65˚C			
Operating Temperature				
Commercial Grade, Full Power[1]	0 to +40˚C	0 to +45˚C	0 to +45˚C	0 to +45˚C
Commercial Grade, Half Power[1,2]	0 to +60˚C	0 to +65˚C	0 to +65˚C	0 to +65˚C
Industrial Grade, Full Power[1]	-20 to +40˚C	-20 to +45˚C	-20 to +45˚C	-20 to +45˚C
Industrial Grade, Half Power[1,2]	-20 to +60˚C	-20 to +65˚C	-20 to +65˚C	-20 to +65˚C
Safety Approvals	UL CSA IEC	UL CSA IEC	UL CSA IEC	UL CSA IEC
Product Weights (Fully configured)	9.75 lbs. (4,43 kg)	6.25 lbs. (2,84 kg) (Mini MegaPAC) 9.0 lbs. (4,08 kg) (A/R MegaPAC)	17.0 lbs. (7,72 kg)	9.25 lbs. (4,2 kg)
Warranty	2 Years			

[1]When using 5V, 200W ConverterPAC(s), decrease maximum temperature ratings by 5˚C.
[2]Consult factory for power derating.

PFC MegaPAC

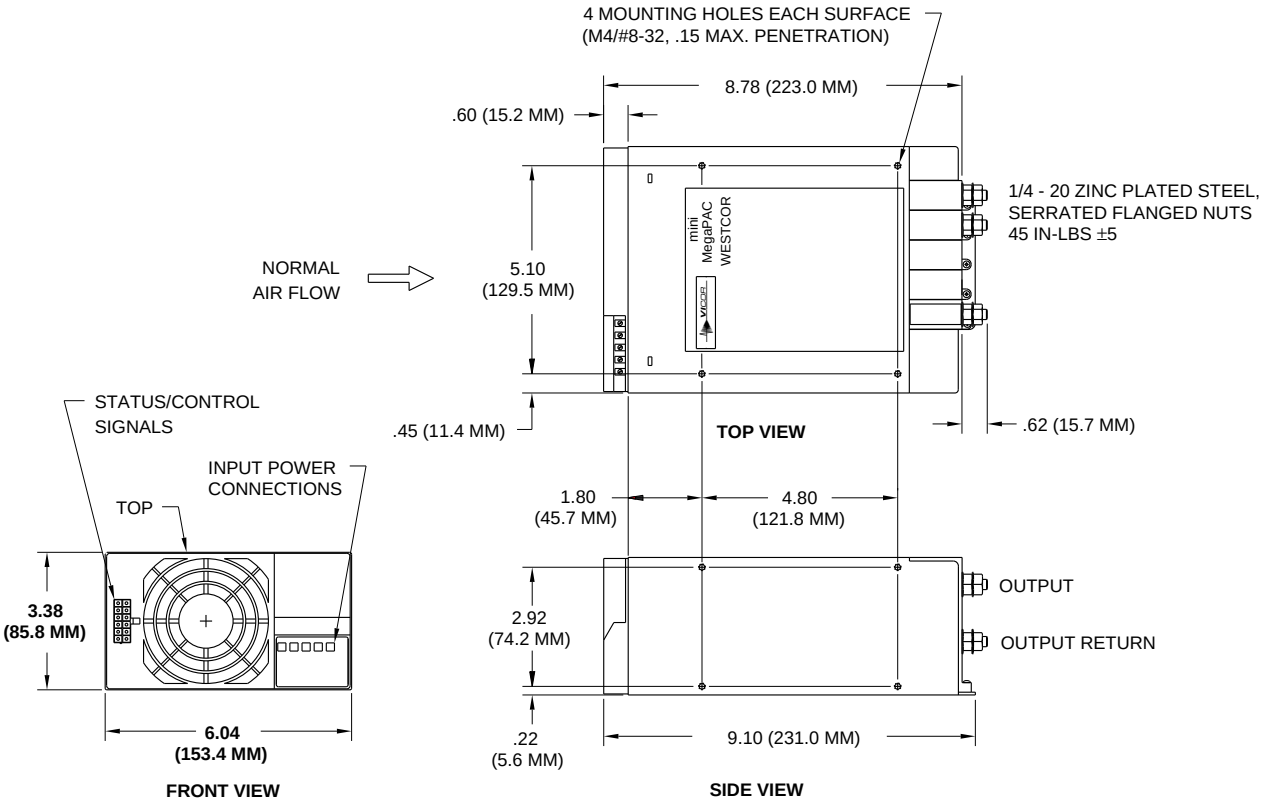


Autoranging MegaPAC

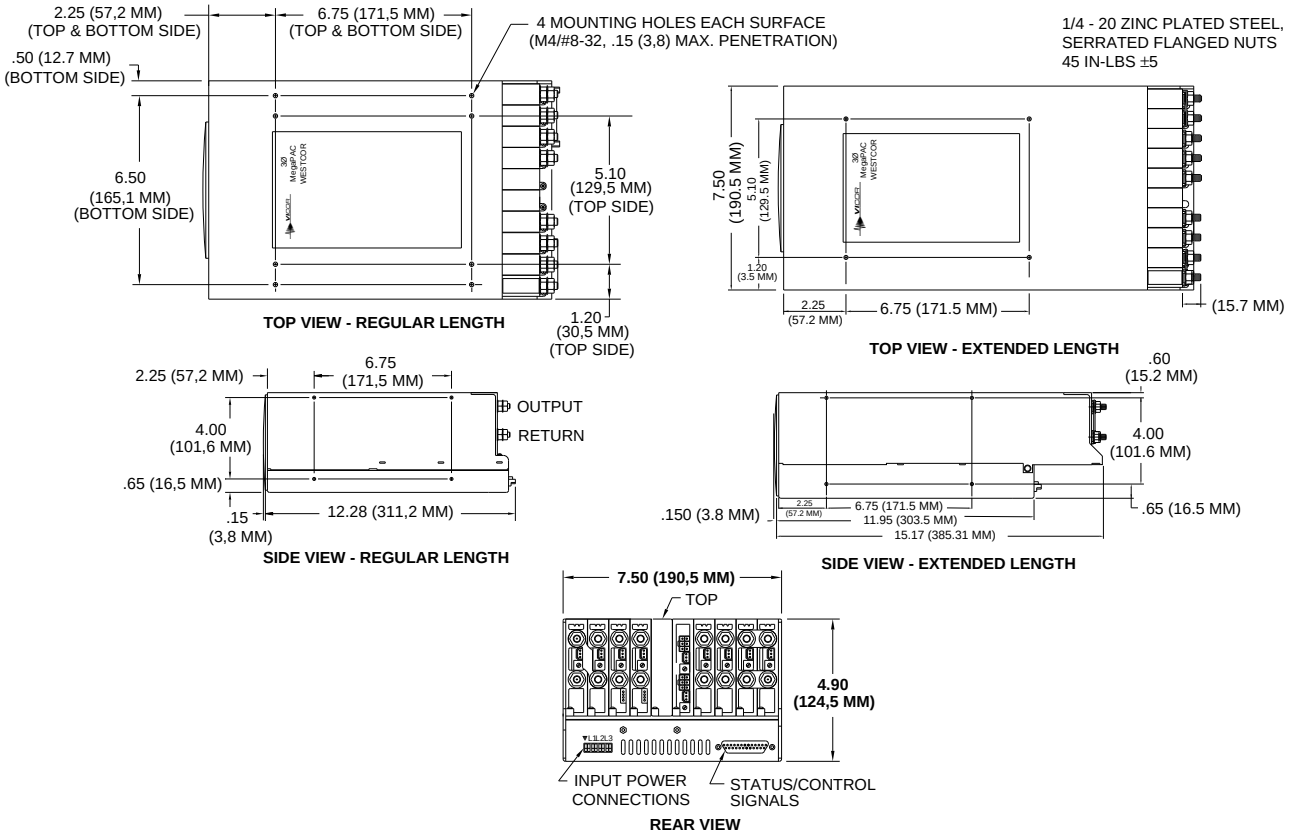


Contact Factory for Detailed Electrical Connections.

Mini MegaPAC

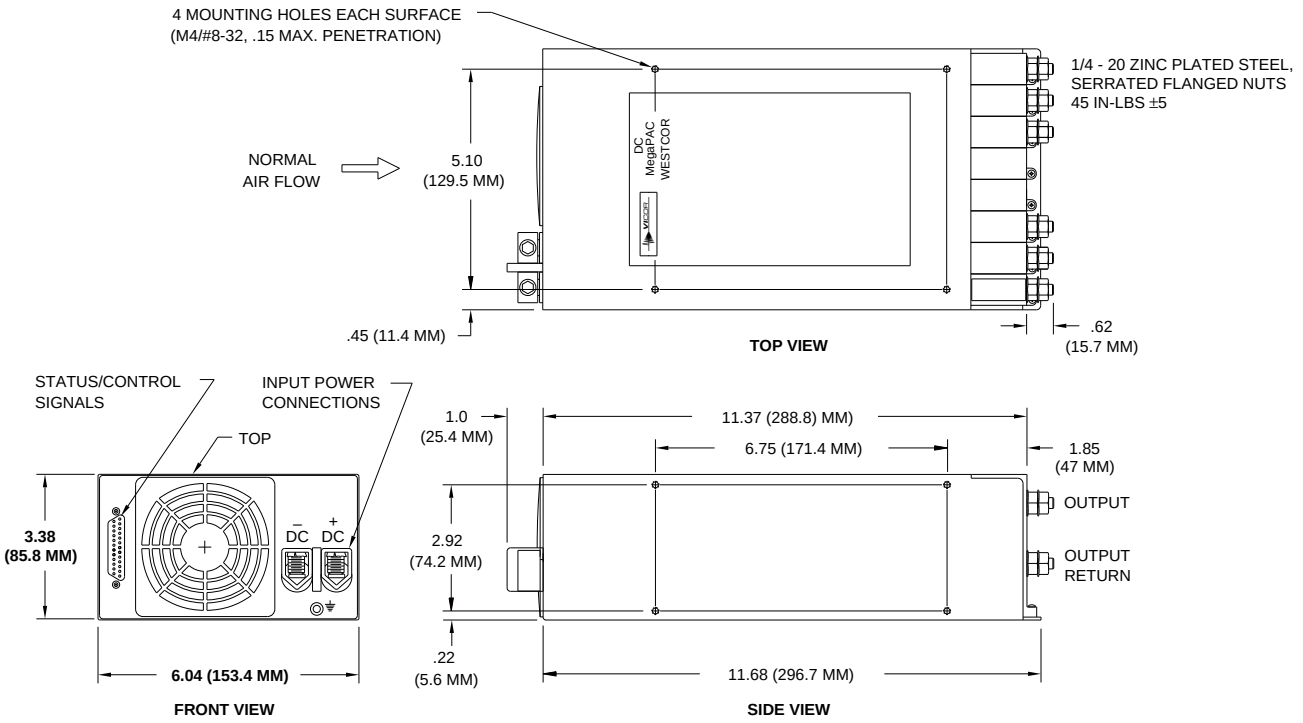


Three Phase MegaPAC, Extended Length Three Phase MegaPAC



Contact Factory for Detailed Electrical Connections.

DC MegaPAC



Contact Factory for Detailed Electrical Connections.

Input Connectors

Autoranging/PFC MegaPAC

INPUT CONNECTIONS
J9

J9-3 AC Neutral
J9-2 AC Hot
J9-1 Earth Ground

J10 INTERFACE CONNECTOR IDENTIFICATION

J10-1	E/D-1
J10-2	E/D-2
J10-3	E/D-3
J10-4	E/D-4
J10-5	E/D-5
J10-6	E/D-6
J10-7	E/D-7
J10-8	E/D-8
J10-9	Vcc +5V, 0.3A
J10-10	Signal Ground
J10-11	AC Power OK
J10-12	General Shutdown

1 2 3 4 5 6
7 8 9 10 11 12

Molex header Mini-Fit Jr. 12 Position #39-30-1120. Customer I/O interface mating receptacle Molex #39-01-2120 with terminal #39-00-0039 and 18-24 AWG stranded wire. Use Molex tool #11-01-0122.

Mini MegaPAC

INPUT CONNECTIONS
J9

J9-5 120 VAC } Jumper for
J9-4 120 VAC } 115V operation
J9-3 AC Neutral
J9-2 AC Hot
J9-1 Earth Ground

J10 INTERFACE CONNECTOR IDENTIFICATION

J10-1	E/D-1
J10-2	E/D-2
J10-3	E/D-3
J10-4	E/D-4
J10-5	E/D-5
J10-6	N/C
J10-7	N/C
J10-8	N/C
J10-9	Vcc +5V, 0.3A
J10-10	Signal Ground
J10-11	AC Power OK
J10-12	General Shutdown

1 2 3 4 5 6
7 8 9 10 11 12

Molex header Mini-Fit Jr. 12 position #39-30-1120. Customer I/O interface mating receptacle Molex #39-01-2120 with terminal #39-00-0039 and 18-24 AWG stranded wire. Use Molex tool #11-01-0122

3Ø MegaPAC

INPUT CONNECTIONS
J1

J1-1 Line 3
J1-2 Line 2
J1-3 Line 1
J1-4 Earth Ground

Amp #54489-4 housing for 3 phase input with ground. Mating housing is AMP #54483-4 and contacts are AMP #53892-4 crimp or AMP #54329-1 solder. Use AMP crimp tool #68347-1.

J10 INTERFACE CONNECTOR IDENTIFICATION

1 Signal Ground	14 Phase Fail
2 Signal Ground	15 Signal Ground
3 Overtemp. Warning	16 Vcc +5 volt, 300 mA
4 Analog Temperature	17 Vcc +5 volt, 300 mA
5 General Shutdown	18 AC Power OK
6 No Connection	19 AC Power Fail
7 Enable/Disable #10	20 Enable/Disable #9
8 Enable/Disable #8	21 Enable/Disable #7
9 Enable/Disable #6	22 Enable/Disable #5
10 Enable/Disable #4	23 Enable/Disable #3
11 Enable/Disable #2	24 Enable/Disable #1
12 Signal Ground	25 Gate #10 Output (isolated)
13 Gate #1 Input (isolated)	

Amp 25 pin connector #746862-2 plug for flat ribbon cable. Mates with housing Amp #747548-2 plus slide latch or similar.

DC MegaPAC

INPUT CONNECTIONS
J9

J9-3 –Vin
J9-2 Earth Ground
J9-1 +Vin

No. 2 AWG stranded copper wire required for 100A DC input connections. Strip wire insulation .75 to .80 from end and insert between bottom of lug body and input bus and tighten screw to 60 inch-lbs.

J10 INTERFACE CONNECTOR IDENTIFICATION

1 Signal Ground	14 No Connection
2 Signal Ground	15 Signal Ground
3 Overtemp. Warning	16 Vcc +5 volt, 300 mA
4 Analog Temperature	17 Vcc +5 volt, 300 mA
5 General Shutdown	18 Input Power OK
6 No Connection	19 Input Power Fail
7 No Connection	20 No Connection
8 Enable/Disable #8	21 Enable/Disable #7
9 Enable/Disable #6	22 Enable/Disable #5
10 Enable/Disable #4	23 Enable/Disable #3
11 Enable/Disable #2	24 Enable/Disable #1
12 Signal Ground	25 Gate #8 Output (isolated)
13 Gate #1 Input (isolated)	

Amp 25 pin connector #746862-2 plug for flat ribbon cable. Mates with housing Amp #747548-2 plus slide latch or similar.

Output Connectors

DUALPAC

J1A

PIN	
1 & 4	+Vout
2 & 5	–Vout
3	+Remote Sense
6	–Remote Sense

J1B

4	+	+
5	-	-
6	-RS	+RS

J1A and J1B Remote Sense/Output connectors are Molex #39-30-1060 Mini-Fit Jr. headers. Mating receptacle is Molex #39-01-2060 housing with #39-00-0039 terminals and 18-24 AWG stranded wire. Use Molex tool #11-01-0122.

J2 "Remote Sense" and "Trim Pin Access" connector Molex #705-53-0002 to mate with #50-57-9403 housing, using #16-02-0103 terminals and 22-24 AWG stranded wire. Use Molex tool #11-01-0118.

PIN	
1	Trim Pin Access
2	+Remote Access
3	–Remote Access

J3 "Power good" connector when "power good" option is specified. Molex #39-27-0042 to mate with housing #39-01-0043 using #39-00-0031 terminals and 22-28 AWG stranded wire. Use Molex tool #57005-5000.

PIN	
1	Vcc
2	Power good
3	Power good inv.
4	Signal ground

R4 "Trimpot" present when adjustable output option is specified.

Fax Inquiry Form

Name: _____

Company: _____

Address: _____

_____

City: _____ **State:** _____ **Country:** _____ **Postal Code:** _____

Phone: _____ **Fax:** _____

❑ Please have an Applications Engineer get in touch with me.

Fax this form to:

VICOR WESTCOR division

(408) 774-5555

or

VICOR

(978) 475-6715
or call us at
1-800-735-6200

EXAMPLE: 3ϕ MegaPAC

Position*	Output No.	Voltage	Current	Option	Style	
1	1	5V	40A	D	M	5V at 200A
2	1	5V	40A		M	
3	1	5V	40A		M	
4	1	5V	40A		M	
5	1	5V	40A		M	
6	2	12V	16.5A		M	12V at 49.5A
7	2	12V	16.5A		M	
8	2	12V	16.5A		M	
9	3 4	+15 -15	5A 5A	L L	D	±15V at 5A
10			BLANK			

*Use only positions 1-5 for Mini MegaPAC; positions 1-8 for Autoranging MegaPAC, PFC MegaPAC and DC MegaPAC; positions 1-10 for 3Ø MegaPAC.

Position*	Output No.	Voltage	Current	Option	Style
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

*Use only positions 1-5 for Mini MegaPAC; positions 1-8 for Autoranging MegaPAC, PFC MegaPAC and DC MegaPAC; positions 1-10 for 3Ø MegaPAC.

ConverterPAC Features

		Style							
		ModuPAC (M)	BatPAC (B)	DualPAC (D)	JuniorPAC (J)	RAMPAC (R)	QPAC* (Q)	DualQPAC* (QD)	JuniorQPAC* (QJ)
Option									
D	Power Good	**OPT**	**NA**	**NA**	**OPT**	**NA**	**OPT**	**NA**	**NA**
T	Trim; +10%/–10%	**OPT**	**NA**	**OPT**	**OPT**	**OPT**	**OPT**	**OPT**	**OPT**
F	Trim: +10%/–50%	**OPT**	**NA**	**OPT**	**OPT**	**OPT**	**OPT**	**OPT**	**OPT**
I	I-Grade Versions	**OPT**	**OPT**	**OPT**	**OPT**	**OPT**	**OPT**	**OPT**	**OPT**
L	Local Sense	**OPT**	**NA**	**OPT**	**OPT**	**OPT**	**OPT**	**OPT**	**OPT**
V2**	VXI Low Noise; (≤15 Vdc, ≤50 mV)	**OPT**	**NA**	**OPT**	**OPT**	**NA**	**NA**	**NA**	**NA**
V1**	VXI Low Noise; (24 Vdc; ≤150 mV)	**OPT**	**NA**	**OPT**	**OPT**	**NA**	**NA**	**NA**	**NA**
	Parallelable	**STD**	**STD**	**NA**	**NA**	**NA**	**STD**	**NA**	**NA**
	Remote Sense	**STD**	**NA**	**STD**	**STD**	**STD**	**STD**	**STD**	**STD**

*Only available for extended chassis 3Ø MegaPACs. **Not available in the PFC MegaPAC.

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Fax: +33-1-3452-2830

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Fax: +49-89-962439-39

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Fax: +44-1276-681-269

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Fax: +852-2956-0782

VICOR